

Thermal degradation of high-density polyethylene/soya spent powder blends

Abstract

This study investigates the properties of high-density polyethylene (HDPE) with different soya spent powder (SSP) blend contents upon oven aging. The aged properties of the HDPE/SSP blends were studied by using tensile test, thermogravimetric analysis, differential scanning calorimetry and Fourier transform infrared analysis. The tensile strength and elongation at break (Eb) decreased inversely proportional to SSP content and aging period. The thermal stability of the blends was significantly reduced after 21 days of aging. After aging, the melting temperature and crystallinity of the blends decreased with increasing aging period. These results revealed that samples with higher SSP content are more brittle upon oven aging.

Keywords

High-density polyethylene (HDPE); Oven aging; Soya spent powder (SSP); Tensile properties